

## NOTES ON MEXICAN BUTTERFLIES, I, PAPILIONIDÆ

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In recent years three collections of Mexican butterflies have come into my hands. These are specimens collected by the Second and Third Hoogstraal Expeditions in 1939 and 1940 and those collected by R. W. L. Potts in 1941. These collections supplement each other rather nicely. Potts' material was collected earlier in the year than Hoogstraal's, the former in April and May, the latter in June, July and August. Both parties collected down the main highway from Texas to Mexico City crossing country that until recently has been almost *tierra incognita* so far as its fauna is concerned. Potts collected the hot lowlands of both coasts and across the highlands on a line from Vera Cruz to Acapulco. Hoogstraal concentrated in the state of Michoacan and the western slopes. Neither penetrated the tropical lowlands in Southern Mexico.

Because the areas visited are those in which we might expect to find a residuum of the early North American Fauna forced southward by the Pleistocene period they are of particular interest to zoo-geographers. This is the only valid reason I have for presenting the data concerning these collections. Accurate data is not available in the literature for much material from the regions visited. The two collections contain 23 species of *Papilio*. I am using the numbers assigned the species in Hoffman's list and giving references to three works only, Godman & Salvin (2) (G. & S.), Rothschild & Jordan (3) (R. & J.) and Jordan in Seitz' (4) (J.). All three contain citations of the original description, etc.

### GEOGRAPHIC DATA

Acapulco, Guerrero, 16° 50' N., 99° 55' W., 100 ft.—

“It was still awfully dry here. (May). It's normally dry country but it blooms quite a bit when the rainy season does hit.

September is supposed to be the best month in Acapulco for flowers . . . probably for insects, too." *Potts*.

Apatzingan, Michoacan, 19° 10' N., 102° 20' W., 1050 ft.—

"Nowhere is there a humid tropical jungle, but along the Rio Tepalcatepec, at the spring of La Majada, around the swamps of Hda. California, and often bordering permanent and semi-permanent streams, the tropical deciduous forest is well developed. Leguminous and other thorn-studded trees from the more arid semi-desert are always present in these forests. . . . The deciduous forests away from the river are more arid in general aspect . . . tall fig trees (*Ficus*) are usually dominant. . . . Just north of Apatzingan . . . is a semi-desert with very widely scattered trees. . . ." *Hoogstraal*.

Arroyo del Calabizas, San Luis Potosi, ? 250 ft.—

"Slightly more open country, somewhat drier (than El Bañito, q. v.), with fields of grass dotted with acacias sparingly scattered through the "jungle" part of the region. . . . A single swing would have netted literally hundreds of yellows, mostly *eubule*." *Potts*.

Arroyo de Meca, Tamaulipas, ca. 24° N., 99½° W., 1320 ft.—

"Cultivated slope, tall, undisturbed thorn bush on one side of road and along stream which was fairly large. Clayey, moist, butterflies at mud along stream." *Potts*. Between Villagran and Victoria.

Chilpanzingo, Guerrero, ca. 17° 30' N., 99° 30' W., 1500 ft. ??

"dry country. . . . Thorn bush etc. but fairly decent cultivated ground . . . apparently at least more rain than to the south." *Potts*.

El Bañito, Valle, San Luis Potosi, 22° 00' N., 99° 00' W., 100–150 ft.—

"Tall tree jungle, plenty of underbrush and grass around the edges, lots of moisture, and plenty hot! Collected down a road, deep mud, and along a small stream, and again found lots of butterflies on the stonework underneath a bridge." *Potts*.

El Pujal, San Luis Potosi ? 100 ft.—

“El Pujal and El Bañito are about ten miles apart. . . . The weather was very hot and sticky. The grass and trees were taller; fewer thorny plants than at Jacala, more leafy plants; dense, thick jungle with much undergrowth.” *Hoogstraal*.

El Sabino, nr. Uruapan, Michoacan, ca.  $19\frac{1}{2}^{\circ}$  N.,  $102^{\circ}$  W., ?

I have no information about this station. *F.M.B.*

El Sol, nr. Tamazunchale, San Luis Potosi,  $21^{\circ} 20'$  N.,  $98^{\circ} 40'$  W., 400 ft.—

“El Sol is really just a tourist camp and a banana plantation on the highway at a small stream. It is in the midst of a heavy, thick jungle country, with several awfully muddy trails leading off to nearby Indian villages. It is a couple of miles north of Tamazunchale. Where an edge of the banana plantation came down to the stream was very good collecting, as was the open ground near the filling station where they were doing a lot of cement work. Cement water seemed to have a great attraction for everything but the *Morphos* and a very few others.” *Potts*.

Fortin, Vera Cruz, ? 1600 ft.—

“Collected (V.3) a field grown rank from a year or two without cultivation beside a little stream. Next morning (V.4) collected at the bottom of the barranca just north of town (Moctezuma Bridge). . . . This is the center of the gardenia and orchid country, lots of trees, jungle and yet plenty of cultivated land as well.” *Potts*.

Galeana, Nuevo Leon,  $24^{\circ} 50'$  N.,  $100^{\circ} 05'$  W., 6500 ft.—

“Dry arroyo, most of the collecting in the shade under the trees lining the stream bed, and under the bridge. The flies were startlingly thick on the stones and could frequently be picked off with tweezers. Tall and heavy brush, thick, tall grass along the roadside.” *Potts*.

Hda. Vista Hermosa, Villa Hermosa, Nuevo Leon,  $25^{\circ} 30'$  N.,  $100^{\circ} 21'$  W., 1500 ft.—

Hoogstraal's collections were made in a variety of habitats at this station ranging from open dry fields to damp ravines. Some

of the material was taken in the shady gorge near Horsetail Falls and in the nearby thicket. The party collected up to 3000 ft. along the trail to Las Adjuntas.

Iguala, Guerrero, 18° 20' N., 99° 35' W., 2100–2500 ft.—

“Dry hillside, apparently partly under cultivation in good years, or perhaps at another season, scattered thorn bush. Hot.” *Potts*.

Jacala, Hidalgo, 21° 00' N., 99° 15' W., 5200 ft.—

“The vegetation is all low and dry, except in the ravines where most of the butterflies were taken. The *hyacintidæ* were caught at the edge of the open meadow. . . . The season was extremely dry, much more than usual.” *Hoogstraal*.

Linares, Nuevo Leon, 24° 50' N., 99° 15' W., ?

I have seen no notes on this station. *F.M.B.*

Monterrey, Nuevo Leon, 25° 40' N., 100° 20' W., 1800 ft.—

*Potts*' description is for his station 4.5 miles north of the city. “‘Bushy-vine’ roadside, small acacias. Hot. It had rained the day before but it was already as dry as a bone. Very few flowers. Flat country, and apparently under cultivation a long time.”

Ojo d'Agua, Vera Cruz, ca. 19° N., 97° W., 1600 ft.—

“This is undisturbed jungle along the sides of the hills that frame the Atoyac Valley. On the plains it has been intensively cultivated since before the 16th century. This spot is about 3 mi. from the Hda. Potrero Viejo. Collected the trail through about a mile of jungle, banana plantation and along a small stream at the edge of a cultivated field. The ‘eye’ by the way is the birth-place of the Atoyac River, 30 or 40 yards across and 10 or 15 feet deep.” *Potts*.

Potrero Nuevo, Vera Cruz, ?

See Ojo d'Agua, which description applies equally well to this station.

Rio Blanco, Vera Cruz, ? 2200 ft.—

“Actually a couple of miles short of the crossing of the river by the Vera Cruz highway. An isolated patch of jungle, perhaps

100 acres or so surrounded by cane fields for the most part. It is an exceedingly fertile orchid hunting ground, penetrated only with a machete in parts. A stream along one edge. In spite of the isolation appears to have everything that is found in the region in abundance." *Potts*.

Sabinas Hidalgo, Nuevo Leon, 26° 30' N., 100° 10' W., 960 ft.—

Collections were made up to 1500 feet. The country is semi-arid with shrub-bordered streams.

Santiago, Nuevo Leon, 25° 30' N., 100° 10' W., ?

I have no notes on this station. *F.M.B.*

Tancitaro, Michoacan, 19° 10' N., 102° 20' W., 6000 ft.—

"Suffice it to say here that this flora and fauna is almost wholly temperate (Nearctic) in aspect . . . pine-oak forest." *Hoogstraal*.

Tule, Oaxaca, ca. 16° 45' N., 96° 30' W., 5000 ft.—

Near Mitla.

Victoria, Tamaulipas, 23° 45' N., 99° 10' W., ?

I have no data for this station. *F.M.B.*

Villagran, Tamaulipas, 24° 30' N., 99° 30' W., 1160 ft.—

"Collected in two arroyos, one fairly dry, the other with a pretty good stream. Still acacias, but a great deal more moisture here (than around Monterrey), grassy and fairly heavily underbrushed. Ground moist. Cultivated country nearby, but streams seem pretty well undisturbed. Big trees along the stream, and sort of meadowy along one side. More flowers, but butterflies not particularly attractive." *Potts*.

### Papilioninæ

#### 3. *P. montezuma* Westwood.

G. & S. ii, p. 197.

R. & J. p. 444.

J. p. 13, pl. 1a.

El Bañito, Valle, San Luis Potosi, 100–150 ft., 1 ♂ vii.19.

39; 1 ♂ 2 ♀♀ vi.26.40 (H.H.); 1 ♂ 1 ♀ iv.30.41 (R.P.).

El Sol, Tamazunchale, San Luis Potosi, 400 ft., 1 ♂ iv.  
31.41, 9 ♂♂ 8 ♀♀ v.28.29.41 (R.P.).

El Pujal, San Luis Potosi, 100 ft., 1 ♀ vii.17.39 (H.H.).

Apatzingan, Michoacan, 1050 ft., 2 ♂♂ 1 ♀ viii.2.40  
(H.H.).

El Sabino, Uruapan, Michoacan, 1 ♀ vii.15-30.35 (H. D.  
Thomas).

The material from the three eastern stations in San Luis Potosi is distinctly smaller than that from the western slope in Michoacan. The length of the left forewings measured from the center of the thorax to the apex for these two groups is presented in Table 1.

TABLE I

	Males				Females			
	No.	Mean	Maximum	Minimum	No.	Mean	Maximum	Minimum
		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>		<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
Eastern .....	13	37.3	41	33	12	36.5	40	31
Western .....	2	45.0	45	45	2	42.0	44	40

There are other differences between these two series. The tails of the eastern specimens tend to be longer than those of the western specimens, this is especially noticeable in the females. In this sex the tails are almost obliterated. The red spots of the western specimens are larger than those on the eastern specimens. In the case of the El Sabino ♀ they are very large and almost coalesce.

The condition of the eastern material ranges from practically fresh to badly battered in Potts' series. Those of Hoogstraal's are slightly worn. It looks as though a fresh brood emerges at the end of May. The western material is relatively fresh indicating a brood emerging at the end of July. The differences noted above may be brood differences or range differences. R. & J. (p. 445) suggest that the differences pointed out are related to north and south range, with the more boldly marked, short tailed specimens coming from the south. Michoacan is south of San Luis Potosi but I feel that east slope and west slope ranges may be a little more important to zoo-geography.

9. *P. arcas mylototes* Bates.

G. & S. ii, p. 198, pl. 65, f. 9, 9a.

R. & J. p. 504.

J. p. 19, pl. 5d.

Ojo d'Agua, Vera Cruz, 1600 ft., 1 ♀ v.12.41 (R.P.).

Of this station Potts says, "This is undisturbed jungle along the sides of the hills that frame the Atoyac Valley." This is about as far north as the species flies. Sallé took it at Cordoba, V. C. (G. & S. p. 199), not far distant from Potts' station. Hoffman (p. 649) reports its Mexican range as "Tierras caliente y templado-cálida del Sur y Oriente del país."—Tropics and subtropics of the South and East.—

10. *P. philenor* Linnæus.

G. & S. ii, p. 204.

R. & J. p. 510.

J. p. 20, pl. 6a.

Horsetail Falls, Hda. Vista Hermosa, Villa Santiago,

Nuevo Leon, 1500 ft., 5 ♂♂, 1 ♀ vi.16–20.40 (H.H.).

Sabinas Hidalgo, Nuevo Leon, 960 ft., 1 ♀ vi.18.39 (H.H.).

35 km. W. of Linares, Nuevo Leon, 1 ♂ viii.7.39 (H.H.).

Galeana, Nuevo Leon, 6500 ft., 26 ♂♂ vii.29–viii.1.39 (H.H.).

nr. Villagran, Tamaulipas, 1160 ft., 1 ♂ 1 ♀ iv.28.41 (R.P.).

El Sol, Tamazunchale, San Luis Potosi, 400 ft., 1 ♀ iv.30.41, 1 ♂ 1 ♀ v.28–29.41 (R.P.).

El Bañito, Valle, San Luis Potosi, 200 ft., 1 ♂ vi.27.40 (H.H.), 1 ♂ iv.30.41 (R.P.).

El Pujal, San Luis Potosi, 100 ft., 2 ♂♂ 1 ♀ vii.19–26.39 (H.H.).

Tancitaro, Michoacan, 6586 ft., 1 ♂ vii.20.40 (H.H.).

Acapulco, Guerrero, 100 ft., 5 ♂♂ v.23–25.41 (R.P.).

None of these specimens has the tail reduced. They are the same "race" as is found in the eastern part of North America. Among some North American lepidopterists there has developed the idea that Mexican *philenor* are short-tailed and should be

designated "race" *acauda* Oberthür. (McDunnough lists *acauda* as a race in *Mem. So. Cal. Acad. Sci.*, I, p. 5, 1938.) "Tailless" specimens from Mexico are just as rare as from the United States. There are two areas in Mexico where the tailless form is common: the Tres Marias Islands off the west coast of Nayarit where the form is designated *philenor orsua* Godman & Salvin; and in Yucatan where I have taken it only at Uxmal and at Valladolid where Gaumer took the type of *corbis* Godman & Salvin. If *orsua* is worth raising to subspecific status so is *corbis*. The Yucatecan populations are unmixed. Whether Oberthür's name should be used for this population or not is debatable. His type specimen is without locality data, thus it might be one of this pure population of "tailless" *philenor* from Yucatan or it may be one of the rare aberrant specimens found among the tailed populations. Its range is separated from that of the North American form by the humid lowlands. It occurs in the arid eastern part of the peninsula of Yucatan.

In general the northern specimens listed above are larger than those from the southern localities. The northern and west coast specimens are much greener than the specimens from San Luis Potosi, which are truly blue. Almost 50 per cent of the males have a well defined series of submarginal spots on the forewings.

On the basis of conditions I should say that in Nuevo Leon there is a brood that emerges late in July, in San Luis Potosi fresh material flies at the end of April and two months later in June. The Acapulco material from the middle of May is fresh as is the mid-July specimens from Tancitaro. The Villagran specimens are worn indicating a brood in early April. There is probably a brood between this one and the late July brood indicated by the Nuevo Leon specimen.

#### 11. *P. polydamas polydamas* Linnaeus.

G. & S. ii, p. 200, pl. 65, f. 14.

R. & J. p. 520.

J. p. 20, pl. 6b.

Arroyo del Calebezas, San Luis Potosi, 250 ft., 1 ♂ iv.  
30.41 (R.P.).

El Sol, Tamazunchale, San Luis Potosi, 400 ft., 1 ♂  
v.29.41 (R.P.).



Fortin, Vera Cruz, 1600 ft., 1 ♂ v.3.41 (R.P.).

El Sabino, nr. Uruapan, Michoacan, 2 ♂♂ 2 ♀♀ vii.15-30.36 (H. D. Thomas).

Apatzingan, Michoacan, 1200 ft., 1 ♂ viii.5.40 (H.H.).

There is nothing remarkable about these specimens except that the series is so short. The Arroyo del Calebezas specimen does bear unusually large, silvery dashes on the forward end of the red, submarginal spots on the underside of the hindwing in spaces  $R_s-M_1$ ,  $M_2-M_3$  and  $M_3-M_4$ .

The El Sabino specimens are rather battered and the ♂ from Apatzingan is very fresh. From this I deduce that there is a brood emerging in the first days of August in Michoacan. The east coast material is in better condition and I am led to believe that it belongs to a brood that emerges around the end of April and beginning of May.

## 12. *P. eracon* Godman & Salvin.

G. & S. ii, p. 728, pl. iii, ff. 11, 12.

R. & J. p. 528.

J. p. 21, pl. 6c.

Apatzingan, Michoacan, 1050 ft., 1 ♂ viii.2.40 (H.H.).

Apparently this is a rather rare species in collections. This specimen is fresh. The species is found only in southwestern Mexico, Guerrero, Colima and Michoacan (Hoffman, p. 649). It was described from a single male from Colima in the Staudinger collection. R. & J. knew of only 2 ♂♂ at Tring, from "Guerrero" and 4 ♂♂ 1 ♀ at the British Museum without definite locality labels.

## 16. *P. ajax ajax* Linnaeus.

G. & S. ii, p. 242 (as *polyxenes* Fab.).

R. & J. p. 540 (as *polyxenes asterius* Cramer).

J. p. 23 (as *polyxenes asterius* Cramer).

Ojo d'Agua, Sabinas Hidalgo, Nuevo Leon, 1000 ft., 1 ♂ vi.14.40 (H.H.).

Galeana, Nuevo Leon, 6500 ft., 3 ♂♂ 1 ♀ vii.30-viii.1.39 (H.H.).

Monterrey, Nuevo Leon, 1800 ft., 1 ♀ iv.27.41 (R.P.).

Jacala, Hidalgo, 5200 ft., 1 ♂ vi.24.39 (H.H.).

Fortin, Vera Cruz, 1600 ft., 2 ♂♂ vi.4.41 (R.P.).

El Sabino, nr. Uruapan, 1 ♂ vii.15-30.36 (H. D. Thomas).

This is a very variable species in Mexico. I wish that I had several hundred specimens from many more localities than I have. However, all are referable to the race *ajax*. Repeated erroneous references to Mexican and North American specimens to the race *americus* Kollar are made. The race *americus* is restricted to the mountains of northwestern South America. Between its range and that of *ajax* lies the range of race *stabilis* R. & J. Occasionally specimens that approach *americus* are met with in Mexico and North America but these cannot be called *americus*. If these aberrant specimens must bear a special name they may be called *ab. pseudo-amicus*.

All three names for male varieties of this race accepted by R. & J. (p. 546) are present in this small series, in fact the three males from Galeana each represent a different form.

TABLE II  
OCCURRENCE OF MALE FORMS IN THIS SERIES

	♂ f. asterius	♂ f. curvifuseia	♂ f. ampliata
Galeana .....	1	1	1
Ojo d'Agua .....	1	.....	.....
Jacala .....	.....	1	.....
Fortin .....	1	1	.....
El Sabino .....	1	.....	.....

The material from Fortin and from El Sabino is fresh indicating broods emerging in early May and late July respectively.

20. *P. thoas autocles* Rothschild & Jordan.

G. & S. ii, p. 223, pl. 69, f. 4 (as *thous*).

R. & J. p. 577.

J. p. 24.

El Bañito, Valle, San Luis Potosi, 200 ft., 1 ♂ 1 ♀ vi.27-29.40 (H.H.).

El Sol. Tamazunchale, San Luis Potosi, 400 ft., 1 ♂ v.29.41 (R.P.).

El Pujal, San Luis Potosi, 100 ft., 1 ♂ vii.20.39 (H.H.).

I was surprised to find only four specimens of this species in the mixed *thoas-cresphontes* series of 28 specimens. The basis for the separations was the male genitalia, the only valid method I know of for certainly separating these two species. Three of the specimens show much reduced submarginal spots continuing beyond  $M_2$ . The El Sol male lacks these. This specimen also lacks the yellow margined crescent on the hindwing and has none on the forewing. The El Bañito female has a cell spot as large as those usually found on *neacles* R. & J. from western Ecuador. These two races, *autocles* & *neacles*, are very poorly differentiated.

21. *P. cresphontes* Cramer.

G. & S. ii, p. 223 (as *thoas*).

R. & J. p. 562.

J. p. 24, pl. 7a.

Sabinas Hidalgo, Nuevo Leon, 960 ft., 15 ♂♂ vi.16.39 (H.H.).

Hda. Vista Hermosa, Villa Santiago, Nuevo Leon, 1500 ft., 1 ♂ 1 ♀ vi.17-18.40 (H.H.).

Jacala, Hidalgo, 4500 ft., 1 ♀ vi.29.39 (H.H.).

Arroyo de Meco, Tamaulipas, 1320 ft., 4 ♂♂ iv.28.41 (R.P.).

El Pujal, San Luis Potosi, 100 ft., 1 ♂ vii.21.39 (H.H.).

El Bañito, San Luis Potosi, 200 ft., 1 ♂ vi.26.40 (H.H.).

Arroyo del Calabizas, San Luis Potosi, 250 ft., 1 ♂ iv.30.41 (R.P.).

Rio Blanco, Vera Cruz, 2200 ft., 1 ♂ v.16.41 (R.P.).

The condition of the specimens would indicate fresh material on the wing in the last week of April and the same week of July in San Luis Potosi and late May in Nuevo Leon.

22. *P. ornythion* Boisduval.

G. & S. ii, p. 227, pl. 69, f. 7, 8.

R. & J. p. 573.

J. p. 25, pl. 7b.

Sabinas Hidalgo, Nuevo Leon, 960 ft., 23 ♂♂ v.16.39 (H.H.).

35 km. W. of Linares, Nuevo Leon, 1 ♂ viii.7.39 (H.H.).

Galeana, Nuevo Leon, 6500 ft., 1 ♂ vi.15.39 (H.H.).

The condition of these specimens indicates that the brood emerged about the middle of May. The Galeana male is duller than the others and the broad yellow submarginal band on the underside of the hindwings is narrower than usual and more or less broken into larger spots by rows of dark scales along the veins. It is interesting to note the increase in our knowledge of this species since G. & S. They doubted that the species hailed from Mexico; R. & J. gave Yucatan and W. Mexico as the range. Hoffman (p. 650) extended the range north to Jalisco in the west, through the Central Mesa and north to Tamaulipas on the east coast. G. & S. did not see a specimen and R. & J. reported only a pair at Tring!

23. *P. lycophron pallas* Gray.

G. & S. ii, p. 225, pl. 69, f. 5, 6.

R. & J. p. 574.

J. p. 25.

Victoria, Tamaulipas, 1 ♂ vi.26.35 (H. A. Freeman).

Arroyo del Calabazas, San Luis Potosi, 250 ft., 4 ♂♂  
iv.30.41 (R.P.).

El Bañito, San Luis Potosi, 200 ft., 1 ♂ vi.26.40 (H.H.).

Rio Blanco, Vera Cruz, 2200 ft., 2 ♂♂ v.10.41 (R.P.).

Apatzingan, Michoacan, 1200 ft., 1 ♂ viii.5.40 (H.H.).

The Apatzingan specimen extends the west coast range of this species. Hoffman (p. 650) notes its occurrence in northern Chiapas on the west, Oaxaca in the Central Mesa and as far north as southern Tamaulipas on the Gulf. The Victoria and Rio Blanco specimens are worn, all others are fresh.

26. *P. daunus* Boisduval.

G. & S. ii, p. 240, pl. 72, f. 9.

R. & J. p. 589.

J. p. 26, pl. 9c.

Hda. Vista Hermosa, Villa Santiago, Nuevo Leon, 1500  
ft., 2 ♂♂ vi.21.40 (H.H.).

Tancitaro, Michoacan, 6600 ft., 1 ♂ 2 ♀♀ vii.20–viii.12.40  
(H.H.).

The Nuevo Leon specimens are similar to those that fly in Colorado. The Michoacan specimens are gigantic (radius of

forewing: ♂ 68 mm., ♀ 71 mm.), and very dark in color. The "yellow" ground color of these west coast specimens is like that of *glaucus* f. *australis* Maynard or *rutulus* f. *ammoni* Behrens. I agree with R. & J. (p. 590) that these forms do not need varietal names, at least until their cause is known.

28. **P. alexiaries garcia** Rothschild & Jordan.

G. & S. ii, p. 241, pl. 72, f. 6, 7 (*P. alexiaries*).

R. & J. p. 592.

J. p. 27, pl. 9b.

Hda. Vista Hermosa, Villa Santiago, Nuevo Leon, 1500 ft., 3 ♂♂ vi.17-21.40 (H.H.).

This species is so close to *glaucus* that it may easily be confused with that species by U. S. collectors touring Mexico. The under-side of the hindwings bear large burnt orange splashes between the cell and the dark marginal band toward the anal angle. My specimens are fresh.

29. **P. pilumnus** Boisduval.

G. & S. ii, p. 241, pl. 72, f. 10.

R. & J. p. 593.

J. p. 27, pl. 9c.

Victoria, Tamaulipas, 2 ♂♂ vi.10.35 (H. A. Freeman).

Hda. Vista Hermosa, Villa Santiago, Nuevo Leon, 1500 ft., 4 ♂♂ vi.17-21.40 (H.H.).

Galeana, Nuevo Leon, 6500 ft., 3 ♂♂ viii.1.39 (H.H.).

35 km. W. of Linares, Nuevo Leon, 1 ♂ viii.7.39 (H.H.).

All these specimens are reasonably fresh.

30. **P. palamedes leontis** Rothschild & Jordan.

R. & J. p. 599.

J. p. 27, pl. 8c.

Hda. Vista Hermosa, Villa Santiago, Nuevo Leon, 1500 ft., 8 ♂♂ 1 ♀ vi.16-21.40 (H.H.).

Villa Santiago, Nuevo Leon, 1500 ft., 1 ♂ viii.8.39 (H.H.).

35 km. W. of Linares, Nuevo Leon, 1 ♂ viii.7.39 (H.H.).

With exception of the Villa Santiago specimen and one of the Hda. Vista Hermosa males these compare very favorably with the

original description of the race. The Villa Santiago specimen has large spots composing the inner of the two submarginal rows on the forewing—3 to 4 times as large as the outer row. The other specimen noted has orange-yellow rather than lemon-yellow spots.

31. *P. pharnaces* Doubleday.

G. & S. ii, p. 231, 730 (pl. 70, f. 10 as *polycharmus*).

R. & J. p. 605.

J. p. 28, pl. 10c.

Jacala, Hidalgo, 4500 ft., 2 ♂♂ 3 ♀♀ vi.25–vii.8.39 (H.H.).

These specimens extend the range of the species considerably to the north of the limit on the east coast noted by Hoffman, Southern Puebla (p. 651). The tail is prominent on each of my specimens. I should say that the material had been flying about ten days when these specimens were caught. The females are in much better condition than the males.

34. *P. anchisiades idaeus* Fabricius.

G. & S. p. 230, pl. 70, f. 6, 7, 11 (as *pandion*).

R. & J. p. 607.

J. p. 28.

Arroyo del Calabizas, San Luis Potosi, 250 ft., 1 ♂ iv.30.41 (R.P.).

Fortin, Vera Cruz, 1600 ft., 1 ♀ v.4.41 (R.P.).

Victoria, Tamaulipas, 2 ♂♂ vi.25–26.35 (H. A. Freeman).

The two northern specimens have lost the last vestige of the whitish transverse band on the forewings. It is obsolete on the southern male and reduced on the female. I believe that Felder's name (Reise Novara, Lep. p. 79. 1865) *pandion* is available for the specimens lacking the light sub-apical area if necessary. Potts' material is fresh, Freeman's slightly flight-worn.

38. *P. garamas* Huebner.

G. & S. ii, p. 238 (as *asclepius*).

R. & J. p. 645.

J. p. 33.

Tancitaro, Michoacan, 6600 ft., 4 ♂♂ vii.20-30.40 (H.H.).

R. & J. record three subspecies from Mexico; *abderus* Hopffer from the east coast, *garamas* Huebner from the central valleys and *baroni* R. & J. from the west slope. These four specimens vary from typical *garamas* to *baroni*, thus I am led to agree with Hoffman (p. 652) that *baroni* had best be retained only as a minor variation of *garamas*. Hoffman considers that *abderus* is a separate full species. Two of my specimens are fresh, one typical *garamas* the other typical *baroni*, the other two are battered.

39. *P. phaon* Boisduval.

G. & S. ii, p. 211.

R. & J. p. 661.

J. p. 36.

El Bañito, Valle, San Luis Potosi, 400 ft., 1 ♀ vii.22.39 (H.H.); 2 ♂♂ iv.30.41 (R.P.).

El Sol, Tamazunchale, San Luis Potosi, 400 ft., 7 ♂♂  
1 ♀ v.29.41 (R.P.).

Arroyo del Calabizas, San Luis Potosi, 250 ft., 1 ♂  
10.31.41 (R.P.).

Galeana, Nuevo Leon, 6500 ft., 1 ♂ iv.29.41 (R.P.).

Of these twelve specimens eleven, all except the female from El Sol, are f. *eridamus* Reakirt, the exception is f. *pharax* G. & S. The Galeana specimen taken by Potts extends the range of species far to the north of that recognized by Hoffman,—Vera Cruz (p. 652).

40. *P. branchus* Doubleday.

G. & S. ii, 207.

R. & J. p. 676.

J. p. 38, pl. 14b.

nr. Potrero Nuevo, Vera Cruz, 1500 ft., 1 ♂ v.5.41 (R.P.).

42. *P. thymbraeus aconophos* Gray.

G. & S. ii, p. 206.

R. & J. p. 678.

TABLE III

	Z.†	3	9	10	11	12	16	20	21	22	23
<i>East slope</i>											
Sabinas Hidalgo, N. L. ....	Te	.....	.....	*	.....	.....	.....	.....	*	*	.....
Monterrey, N. L. ....	Te	.....	.....	.....	.....	.....	*	.....	.....	.....	.....
Hda. Vista Hermosa, N. L. ....	Te	.....	.....	*	.....	.....	.....	.....	*	.....	.....
Galeana, N. L. ....	Te	.....	.....	*	.....	.....	*	.....	.....	*	.....
Villagran, Tam. ....	ST	.....	.....	*	.....	.....	.....	.....	.....	.....	.....
Arroyo de Meca, Tam. ....	ST	.....	.....	.....	.....	.....	.....	.....	*	.....	.....
Victoria, Tam. ....	ST	.....	.....	.....	.....	.....	.....	.....	.....	.....	*
El Pujal, S. L. P. ....	Tr	*	.....	*	.....	.....	.....	*	*	.....	.....
El Bañito, S. L. P. ....	Tr	*	.....	*	.....	.....	.....	*	*	.....	*
Arroyo del Calabizas, S. L. P. ....	Tr	.....	.....	.....	*	.....	.....	.....	*	.....	*
El Sol, S. L. P. ....	Tr	*	.....	*	.....	.....	.....	*	.....	.....	.....
Fortin, V. C. ....	Tr	.....	.....	.....	*	.....	*	.....	.....	.....	.....
Ojo d'Agua, V. C. ....	Tr	.....	*	.....	.....	.....	*	.....	.....	.....	.....
Rio Blanco, V. C. ....	Tr	.....	.....	.....	.....	.....	.....	.....	*	.....	*
Jacala, Hid. ....	ST	.....	.....	.....	.....	.....	*	.....	*	.....	.....
<i>West slope</i>											
Tancitaro, Mich. ....	Te	.....	.....	*	.....	.....	.....	.....	.....	.....	.....
El Sabino, Mich. ....	Tr	*	.....	.....	*	.....	*	.....	.....	.....	.....
Apatzingan, Mich. ....	Tr	*	.....	.....	*	*	.....	.....	.....	.....	*
Iguala, Guer. ....	Tr	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Acapulco, Guer. ....	Tr	.....	.....	*	.....	.....	.....	.....	.....	.....	.....

† Te. Temperate.

ST. Sub-tropical.

Tr. Tropical.

J. p. 38.

N. of Iguala, Guerrero, 2100 ft., 1 ♂ v.22.41 (R.P.).

El Sabino, Uruapan, Michoacan, 1 ♂ vii.15-30.35 (H. D. Thomas).

Both specimens are typical of the subspecies. Both are battered.

44. *P. philolaus* Boisduval.

G. &amp; S. ii, p. 220.

R. &amp; J. p. 693.

J. p. 39, pl. 14d.

Arroyo del Calabizas, San Luis Potosi, 250 ft., 9 ♂♂ iv.30.41 (R.P.).

El Bañito, Valles, San Luis Potosi, 150 ft., 8 ♂♂ iv.30.41 (R.P.); 1 ♂ 7 ♀♀ vi.26-29.40 (H.H.).

Rio Blanco, Vera Cruz, 2200 ft., 3 ♂♂ v.10.41 (R.P.).



TABLE III—(Continued)

29	30	31	34	38	39	42	44	45	45a	47	52	Faunal affiliation
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Nearetic—archaic nearctic
*	*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Nearetic—archaic nearctic
*	*	.....	.....	.....	*	.....	.....	.....	.....	.....	.....	Nearetic—archaic nearctic
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
*	.....	.....	*	.....	.....	.....	.....	.....	.....	.....	.....	Archaic nearetic—neotropical
.....	.....	.....	.....	.....	*	.....	*	.....	.....	.....	.....	Neotropical—nearetic
.....	.....	.....	.....	.....	*	.....	*	.....	.....	.....	.....	Neotropical—nearetic
.....	.....	.....	*	.....	*	.....	*	.....	.....	.....	.....	Neotropical
.....	.....	.....	.....	.....	*	.....	.....	.....	.....	*	.....	Neotropical (nearetic)
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Neotropical (nearetic)
.....	.....	*	.....	.....	.....	.....	*	.....	.....	.....	.....	Neotropical (nearetic)
.....	.....	.....	.....	.....	.....	.....	*	.....	.....	.....	.....	Neotropical—nearetic
.....	.....	.....	.....	*	.....	.....	.....	.....	.....	.....	.....	Nearetic—neotropical
.....	.....	.....	.....	.....	.....	*	.....	.....	*	.....	.....	Neotropical (nearetic)
.....	.....	.....	.....	.....	.....	.....	.....	.....	*	.....	.....	Neotropical
.....	.....	.....	.....	.....	.....	*	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Two of the El Bañito females are f. *niger* Eimer. The condition of the material indicates that there is a late April brood and another in early July in San Luis Potosi. I have seen this species so abundant in Yucatan in April that over a hundred specimens might be trapped with a net at one time on a mud puddle.

- 45. *P. epidaus epidaus* Doubleday.  
 G. & S. ii, p. 221, pl. 68, f. 15.  
 R. & J. p. 698.  
 J. p. 40, pl. 15c.  
 Rio Blanco, Vera Cruz, 2200 ft., 2 ♂♂ v.10.41 (R.P.).  
 Arroyo del Calabizas, San Luis Potosi, 1 ♂ iv.30.41 (R. P.).  
 Jacala, Hidalgo, 4500 ft., 2 ♂♂ 1 ♀ vi.24–vii.2.39 (H.H.).  
 Tule, Oaxaca, 5000 ft., 1 ♂ v.18.41 (R.P.).

- 45a. *P. epidaus fenochionis* Godman & Salvin.  
 G. & S. ii, p. 222, pl. 68, f. 13, 14.

